IVV 22: Risk Management

Version: H

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Note: The official version of this document is maintained in IV&V's internal IV&V Management System Website (https://confluence.ivv.nasa.gov:8445/display/IMS). This document is uncontrolled when printed.

Purpose

The purpose of this system level procedure (SLP) is to establish a consistent and documented method of performing risk management within the NASA IV&V Program. The goals of risk management are to:

- Ensure that decisions between alternatives are made with an awareness of the risks associated with each
- Manage the aggregate risk that threatens the achievement of performance objectives
- Identify factors that are likely to impact NASA IV&V Program/Project objectives in the areas of performance (quality), safety, schedule, and cost
- Determine mitigation approaches to limit the impact of the identified factors
- Communicate risk status and approaches for mitigation

Scope

The procedures in this document apply to the Risk Management System within the NASA IV&V Program, to include the risk management process and the RiskManager Tool. Risk management is a means to anticipate, mitigate, and control risks, and to make risk informed decisions to increase the overall success of the NASA IV&V Program.

Definitions and Acronyms

Official NASA IV&V roles and terms are defined in the Quality Manual.

- **Risk Management System (RMS)**
  - The Risk Management System within the NASA IV&V Program includes the functional organizations, risk process, and RMT. The RMS produces results through the interaction of the functional organizations, processes, and the RMT.
- **RiskManager Tool (RMT)**
  - The RiskManager Tool is a computer automated tool designed to facilitate the IV&V risk process. The RMT is the primary risk repository that is used to document, capture, and support the management of risk data in support of this SLP. The RMT can be accessed via the following link at https://risk.ivv.nasa.gov/.

Acronyms

IMS	NASA IV&V Management System
NODIS	NASA Online Directives Information System

NPR	NASA Procedural Requirements
OSMA	Office of Safety and Mission Assurance
QM	Quality Manual
RMS	Risk Management System
RMT	RiskManager Tool
RRB	Risk Review Board
SLP	System Level Procedure

Risk Management System

The RMS process flow is depicted below in Figure 4-2, *Risk Management and Approval Process*. The responsibilities and actions that shall be performed by process participants are described in this document. Any information supplemental to a depicted process will appear after the diagram.

Risk Roles and Responsibilities

Everyone has some responsibility for risk management and the identification of risk occurs at all levels of the Program. However, there is an overall structure to the responsibility that starts with the IV&V Program Manager and flows down to the functional organizations and the projects within those units.

Risk communication takes place among stakeholders within the IV&V Program and externally, including the Office of Safety and Mission Assurance (OSMA), Mission Directorates, Missions, and Projects. Internal informal communication can take place in a variety of forms and forums ranging from project meetings and telecoms to email.

The primary formal communication method within the IV&V Program is the Risk Review Boards (RRB). It is through the Office level and Program level RRBs that the formal communication, approval, and escalation of risks (Internal & External) occur, as depicted in the following Figure 4-1, *Risk Communication and Escalation*.

Lower level risk information is communicated at the IV&V Program RRB meetings to provide status on risks being managed at that organizational level as well as to elevate risks when they cannot be addressed at that functional level. The IV&V Program RRB also develops and manages its own programmatic and institutional risks.

Top priority score risks (Internal & External) that are reported to the OSMA, on a quarterly basis, are formally communicated and approved through the Program RRB. External risks approved by the Office level RRB and communicated to the Program level RRB are submitted to the IV&V projects by the Project Manager for disposition. External risk disposition status is documented and updated in the RMT by the Project Manager.

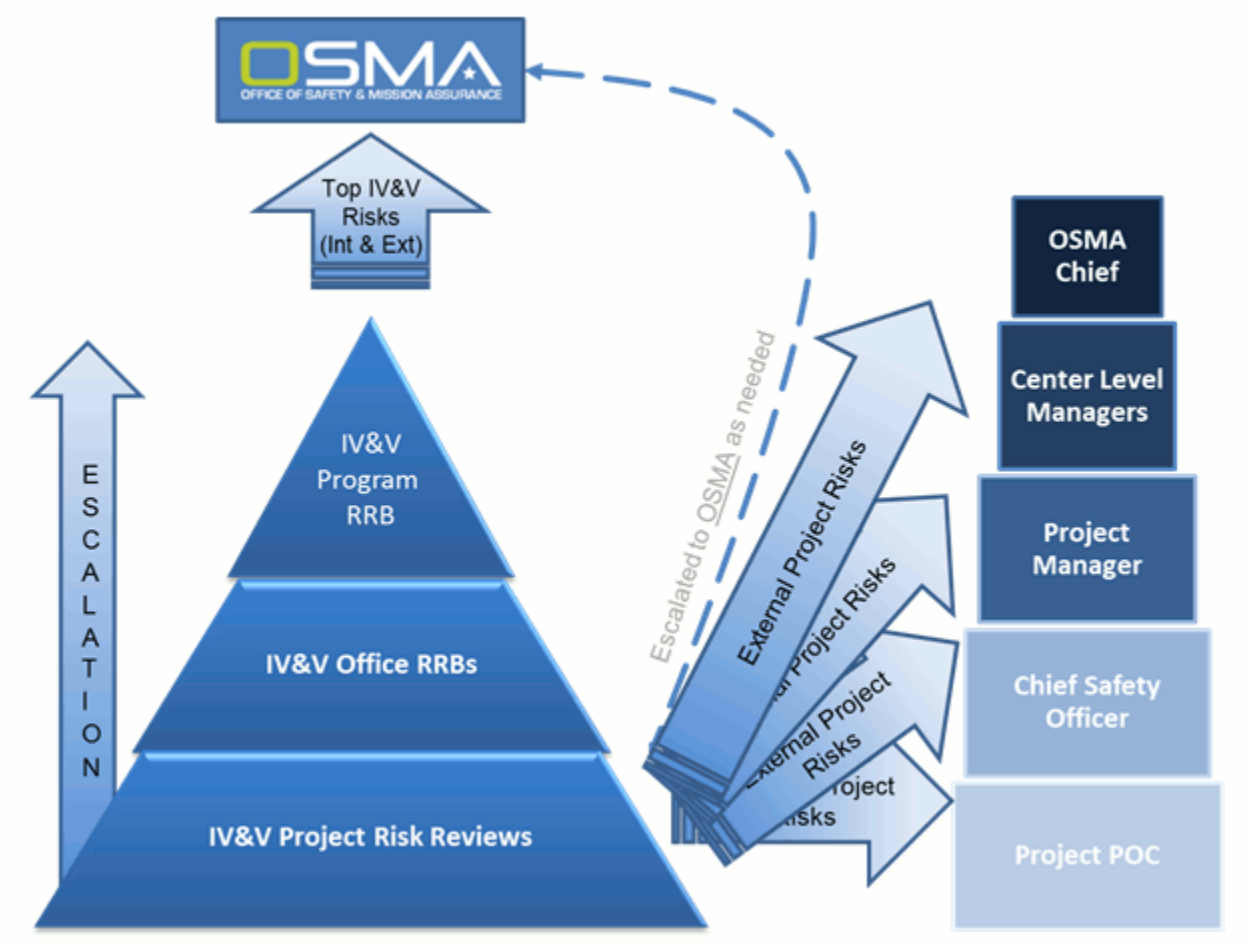

Figure 4-1 - Risk Communication and Escalation

IVV 22 Risk Communication and Escalation -- 03-30-2017.docx

The risk communication process as facilitated by the RMT establishes a real-time top risk list for an office by communicating risk information and status to the next organizational level.

The IV&V Program also assures that performance requirements assigned to the organizational units reflect appropriate tradeoffs between/among competing objectives and risks.

Each functional organization within the IV&V Program has a Functional Lead. The Functional Leads have the overall responsibility of ensuring that risks are identified, documented in the RMT or via T2006, tracked, and approved within their respective functional organizations. Each functional organization has an associated governing RRB. This RRB is led by the Functional Lead with support from the IV&V Program Risk Manager. The Functional Lead (or designee) and the IV&V Program Risk Manager (or designee) are mandatory attendees at a governing RRB.

On a monthly basis the Functional Leads are responsible for maintaining awareness of their risks. The Functional Leads are also responsible for managing the top risks within their organizational unit, and for providing infrastructure and resources for risk management support.

The Project Manager and Project Lead are responsible for identifying, analyzing, monitoring, maintaining status in the RMT, and communicating risks in regard to their project. External risks approved to be submitted to the mission project will be managed in the RMT by the Project Manager and Project Lead. Thus no additional RRB action is required but periodic informal coordination with the Functional Lead and IV&V Program Risk Manager is required.

The IV&V Program Risk Manager is responsible for the RMS. In addition, the IV&V Program Risk Manager provides training on the implementation of the process and the RMT. The IV&V Program Risk Manager is responsible for monitoring the RMS process execution to understand how well the process is working, and to improve the process when possible.

Risk Management and Approval Process

The risk management and approval process, as depicted in Figure 4-2, *Risk Management and Approval Process,* facilitates the decision to validate candidate risks and the authorization to proceed to the subsequent steps of managing risk. This process includes developing a strategy for risk management for a particular program, project, or activity to tracking and communicating risks as required. The goal of risk management is to manage risk at a level where budget and resources can be controlled. For specific information regarding risk management, see S3001, *Guidelines for Risk Management*.

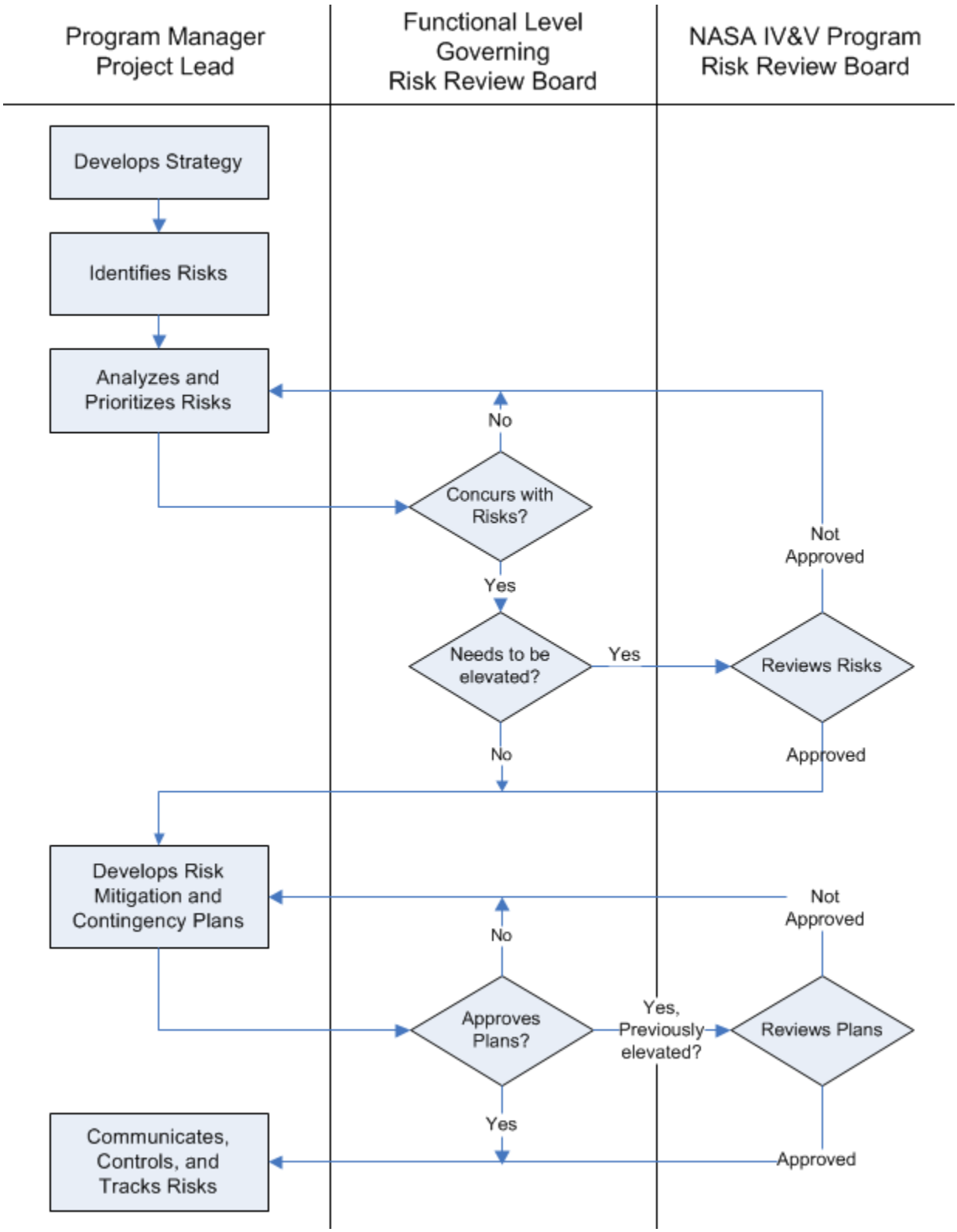

Figure 4-2 - Risk Management and Approval Process

IVV 22 Risk Management and Approval Process -- 03-30-2017.vsd

RiskManager Tool

The RMT is the central repository for documenting risk status in the IV&V Program. All risks that fall within the scope of this SLP, including risks that contain Sensitive But Unclassified (SBU) information, shall be documented in the RMT with the exception of risks that are sensitive or classified /CNSI risks. Sensitive risks (e.g. procurement, supervisory, or legislative risks) shall be documented using the template T2006, Risk Review Template, and the RMT. The T2006 template will document the risk details and shall be stored by an appropriate civil service employee in a manner that properly restricts access. The RMT will be used for tracking sensitive risks (Risk Number, Title, Score, etc.) but consist of limited information. Classified/CNSI risks are to be handled according to IVV 22-1, *CNSI Risk Management*, and S3007, *IV&V Guidelines for Handling CNSI*.

In addition the RMT facilitates the communication, capture, tracking, and management of risk data in support of the Risk Management and Approval Process flow depicted in Figure 4-2. The RMT can be accessed via the IV&V Program Portal or directly at: https://risk.ivv.nasa.gov. To get access to the RMT notify SWAT by email at ivv-dl-swat@mail.nasa.gov or by submitting a service request in JIRA (a proprietary issue tracking product). RMT Tips & Training are available through the RMT itself under the 'Help' menu, or in Confluence at: https://confluence.ivv.nasa.gov:8445/display/SWAT/RiskManager#EnterToolName-5.

Metrics

Any metrics associated with this SLP are established and tracked within the NASA IV&V Metrics Program.

Records

The following records will be generated or updated and filed in accordance with this SLP and IVV 16, *Control of Records*, and in reference to NASA Procedural Requirements (NPR) 1441.1, *NASA Records Management Program Requirements.*

Record Name	Original	Essential	Responsible Person	Retention Requirement	Location
Risk	Y	N	Project Manager	Destroy when 7 years old. (1/26.5A)	ECM System, and/or RMT
Risk Board Minutes	Y	N	Risk Management Lead	Destroy when 7 years old. (1/26.5A)	ECM System

References

REFERENCES	
Document ID/Link	**Title**
http://risk.ivv.nasa.gov	RiskManager Tool
IVV QM	NASA IV&V Quality Manual
IVV 16	Control of Records
IVV 22-1	CNSI Risk Management
NPR 1441.1	NASA Records Management Program Requirements
S3001	Guidelines for Risk Management
S3007	IV&V Guidelines of Handling CNSI
T2006	Risk Review Template

If any procedure, method, or step in this document conflicts with any document in the NASA Online Directives Information System (NODIS), this document shall be superseded by the NODIS document. Any external reference shall be monitored by the Document Owner for current versioning.

Version History

VERSION HISTORY				
Version	**Description of Change**	**Rationale for Change**	**Author**	**Effective Date**
Basic	Initial Release		Kenneth Costello	1/24 /2008
A	Update terminology changed due to re-engineering process		Kenneth Costello	4/7/2008
B	Changed “IV&V Facility” to “IV&V Program”		Stephanie Ferguson	2/19 /2009
C	Change document number from IVV 09-9 to IVV 22; update Section 6.0, Records		Kurt Kehl	4/22 /2010
D	Added reference document precedence statement		Sara Cain	7/29 /2010
E	Streamline and bring in line with the overall NASA requirements for risk management specifically with respect to risk informed decision making.		Kenneth Costello	9/27 /2012
F	Add RiskManager Tool (RMT) verbiage. Add sensitive risks to use T2006, Risk Review Template, and store on ECM.	PAR 2013-P-390. Integrate RiskManager Tool (RMT).	Scott Kinney	1/22 /2014
G	Updates as a result of expanding the external risk states, clarifications of risk communication, escalation and approval, changed “organizational units” to “functional organizations”, and editorial changes.	Process improvement and recommended updates as a result of an internal audit.	Scott Kinney	12/17 /2014
H	Simplify the risk states (also in the RMT). Clarified use of CNSI risks: Add references to IVV 22-1, CNSI Risk Management, and S3007, IV&V Guidelines for Handling CNSI. Removed definition, Risk Classification, to avoid any confusion with CNSI.	Improve management and communication of realized risks (a.k.a. issues). Clarify handling of risks with SBU or CNSI (new docs for handling CNSI risks now exist).	Scott Benton	10/16 /2017